

**Notice of Allowability**

Application No.

10/688,984

Examiner

Livius R. Cazan

Applicant(s)

MURANAKA ET AL.

Art Unit

3729

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the telephone interview on 3/17/2006 and the voice mail message received on 03/20/2006.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

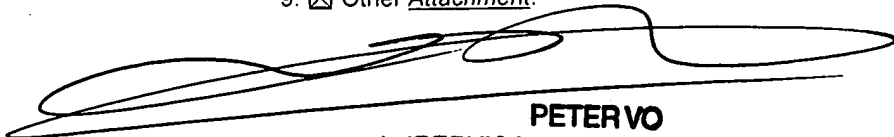
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other Attachment.

  
**PETER VO**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 3700**

### EXAMINER'S AMENDMENT

1. The amendment filed on 2/21/2006 has been fully considered and made of record.
2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone message from Michelle Lester on 03/20/2006.

The application has been amended as follows:

Claim 1:

- In line 3, replaced "in" with --as--
- In line 5, inserted --and being in the form of a solid cylinder free from an enlarged head or a flange and having a uniform outside diameter substantially throughout the length thereof-- after "metal cup"
- In line 9, inserted --, thereby forming the electrode-- after "protrudes"

Claim 15:

- In line 15, inserted --, thereby forming the electrode-- after "member"

For clarity, the claims (as amended by the examiner) have been included as an attachment.

3. The following is an examiner's statement of reasons for allowance: the prior art does not teach (in combination with all other claim limitations) manufacturing a center electrode for a spark plug by press-fitting a core member into a metal cup, the cup being formed in a hollow cylinder with one end closed, the core member being made of a metal having a higher thermal conductivity than the metal cup and being in the form of a solid cylinder free from an enlarged head or a flange and having a uniform outside diameter substantially throughout the length thereof, and performing a cold-forging process to form a small-diameter portion protruding axially from the closed end of the metal cup, and wherein the small-diameter portion is smaller in diameter than a transverse cross-section through the cup and core member assembly. Furthermore, the prior art does not teach (in combination with all other claim limitations) manufacturing a center electrode for a spark plug by preparing a bottomed cylindrical metal cup formed as a hollow cylinder with an open end, preparing a solid cylindrical core made of metal higher in the coefficient of thermal conductivity than that of the metal of the metal cup, press-fitting the core member into the metal cup to form a cup and core assembly, setting the cup and core assembly into a die having a large-diameter portion, an intermediate-diameter portion and a small-diameter portion, and cold-forging the cup and core assembly in said die to cause the cup and core assembly to comprise a large-diameter portion, an intermediate-diameter portion and a small-diameter portion corresponding to said portions of said die, and wherein said small-diameter portion of said cup and core assembly is smaller in diameter than a transverse cross-section through said cup and core member.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Livius R. Cazan whose telephone number is (571) 272-8032. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571)272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LRC 03/20/2006

A handwritten signature in dark ink, appearing to read 'Peter Vo', with a long horizontal line extending from the end of the signature.

**PETER VO**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 3700**

**Attachment**

Claim 1: A method of manufacturing a center electrode for a spark plug, comprising the steps of:

press-fitting a core member into a metal cup, the metal cup being formed ~~in~~ as a hollow cylinder with one end closed, the core member being made of metal having a higher thermal conductivity than the metal cup and being in the form of a solid cylinder free from an enlarged head or a flange and having a uniform outside diameter substantially throughout the length thereof; and

thereafter, performing a cold-forging process to form a small-diameter portion protruding axially from the closed end of the metal cup, wherein the small-diameter portion is smaller in diameter than a transverse cross-section through the cup and core member assembly from which it protrudes, thereby forming the center electrode.

Claim 15: A method of manufacturing a center electrode for a spark plug, comprising the steps of:

preparing a bottomed cylindrical metal cup formed as a hollow cylinder with an open end,

preparing a solid cylindrical core made of metal higher in the coefficient of thermal conductivity than that of the metal of the metal cup,

press-fitting the core member into the metal cup to form a cup and core assembly;

setting the cup and core assembly into a die having a large diameter portion, an intermediate diameter portion and a small-diameter portion; and

cold-forging the cup and core assembly in said die to cause the cup and core assembly to comprise a large-diameter portion, an intermediate-diameter portion and a small-diameter portion corresponding to said portions of said die, wherein said small-diameter portion of said cup and core assembly is smaller in diameter than a transverse cross-section through said cup and core member, thereby forming the center electrode.

The remaining claims are as submitted by Applicant in the amendment filed on 2/21/2006.